Remarks

Claims 1 and 9 have been amended. Claims 1-9 and 11-12 remain in the application, and re-examination and reconsideration of the application are respectfully requested.

The invention of amended claim 1 requires, referring to Fig. 1, a microwave generator 22 connected to a high voltage power supply 20 that, in turn, is connected to an AC power source 30. A current limiting device 50 is connected between the microwave generator 22 and high voltage power supply 20 and operates to limit a short circuit current being supplied to the microwave generator 22. A fault detector 56 operating independent of the current limiting device 50 provides an error signal in response to detecting the short circuit current being supplied to the microwave generator. In operation, as described in paragraphs 16-18, upon an occurrence of a short circuit current, the current limiting device 50, connected in series between the high voltage power supply 20 and the microwave generator 22, provides a limited, instantaneous suppression of the short circuit current to initially protect the microwave generator 22 from damage. The slower responding fault detector 56 and control 32 are thereafter effective to detect the short circuit current and disconnect the power supply 20 from the AC power source 30, thereby further protecting the microwave generator 22 from damage.

Claims 1, 3-5, 7-9 and 11-12 are rejected under 35 U.S.C. §103(a) as being unpatentable over Pratt et al. (U.S. Patent No. 5,642,268) in view of the Applicant Admitted Prior Art (AAPA), which pursuant to a telephone conference with the Examiner on December 14, 2005, was identified as Kyong-keun (U.S. Patent No. 5,224,027) referenced at col. 3, lines 5-10 of Pratt et al.

Referring to Fig. 3 of Pratt et al., a power supply circuit 90 receives an AC input from an AC input device 92 such as a supply of 120 volts AC. An AC to DC converter 94 converts the AC line input to a DC output of approximately 400 volts DC on the output lines 96 and 98. The DC output lines are connected to the input of a switching regulator section 100, which, as shown in Fig. 4, includes a transistor drive 128, FET switches 130, 132 to provide a square wave output 140-142, col. 8, lines 15-40. An LC circuit 156, 158 160 provides a sinusoidal waveform in the primary coil 160 of step-up transformer 162. A high voltage section 108 includes a secondary

coil 164 that provides a high voltage sinusoidal output, col. 8, lines 40-56. That sinusoidal output is rectified by a full wave bridge 166 to provide a full wave rectified current on outputs 110, 112 of the high voltage section 108, col. 8, lines 56-63. The outputs 110, 112 are coupled to the cathode and anode of the magnetron 102.

In operation, an induced ramping or saw-tooth voltage function is generated at the output lines 110 and 112 and is monitored by a voltage feedback 114 to determine when the ramping voltage applied to the magnetron reaches a reference voltage level. Upon the voltage feedback detecting the ramping voltage reaching the reference voltage level, the switching regulator section 100 is turned off; and the ramping voltage appearing at output lines 110 and 112 begins to fall. By varying the reference voltage level, the operating frequency of the magnetron 102 is changed, col. 7, lines 26-40. At the same time, a current sense circuit 116 monitors the current flow through the magnetron 102 and provides a current feedback to the controller 152, which operates the transistor drive 128 to bring the magnetron current to a desired power, col. 7, lines 41-46. Once the current is determined to be in the proper operating range, the power supply circuit 90 shifts to a constant current source and the magnetron continues to operate at the correct frequency range. By changing from the voltage control mode to the current control mode, the power level can be adjusted, col. 7, lines 47-54.

Thus, the Pratt et al. power supply 90 functions similar to a switch mode power supply; and the voltages and currents sensed by the respective voltage and current feedback circuits 114, 116 are expected operating voltages and currents and do not represent voltages or currents caused by a short circuit fault condition.

Kyong-keun relates to a switch mode power supply that is used to drive a magnetron. Referring to Fig. 1, a PWM control 80 applies switching control pulses to a switching means 90 that, in turn, controls voltages applied to a magnetron 50. A first feedback means 30 provides feedback voltages from a transformer 20 driving the magnetron 50. A current detecting transformer 60 provides feedback voltages to a second feedback means 70 that, in turn, operates the PWM control 80 as determined by the feedback voltages from the first and second feedback means 30, 70. Therefore, as described at col. 3 lines 33-63, as voltage from the magnetron increases, current applied to the current detecting transformer 60 increases; and the

pulse width of the PWM control 80 is controlled, for example, reduced. Thus, the switching cycle of the switching means 90 is stabilized, for example, the duty cycle reduced; and the voltage supplied to the magnetron is stabilized. Thus, Kyong-keun provides a switch mode power supply (SMPS) system that protects the magnetron from operating overcurrents.

In order to establish a prima facie case of obviousness, it is necessary that the Office Action present evidence, preferably in the form of some teaching, suggestions or incentives or inference in the applied prior art or, in the form of generally available knowledge, that one having ordinary skill in the art would have been led to arrive at the claimed invention.

Applicants submit that a prima facie case of obviousness is not made because Pratt et al. in view of Kyong-keun does not teach, suggest or motivate one to provide the following elements.

First, claims 1 and 9 require a current limiting device connected between the high voltage power supply and the microwave generator for limiting a short circuit current being supplied to the microwave generator. As noted in the Office Action, Pratt et al. does not disclose a current limiting device. Kyong-keun provides a current detecting transformer 60 for detecting current provided by the rectifier 40 to the magnetron 50. However, Applicants submit that the current detecting transformer 60 is not a current limiting device connected between the magnetron 50 and the rectifier 40, that is, the high voltage power supply, and cannot limit a short circuit current being supplied to the magnetron 50. Applicants further submit that Kyong-keun does not describe, suggest or motivate one to connect a current limiting device between the high voltage power supply 20, 40 and the magnetron 50 as suggested in the Office Action.

Second, claims 1 and 9 require a first, current limiting device connected between the hight voltage power supply and the microwave generator and second, an independent fault detector that independently detects a current, and more specifically, a short circuit current being supplied to the microwave generator. Pratt et al., in Fig. 3, shows a voltage feedback 114 and a current feedback 116 but does not show a current limiting device and an independently operating current related fault detector as required by claims 1 and 9. As discussed above, Kyong-keun

provides a current detecting transformer 60 for detecting current provided by the rectifier 40 to the magnetron 50 but provides neither a current limiting device nor an independent fault detector for detecting a short circuit current being supplied to the magnetron 50.

In view of the above, Applicants submit that claims 1 and 9 are patentable and not obvious under 35 U.S.C. §103(a) over Pratt et al. in view of AAPA, that is, Kyong-keun.

Claim 2 is rejected under 35 U.S.C. §103(a) as being unpatentable over Pratt et al. (U.S. Patent No. 5,642,268) in view of the Applicant Admitted Prior Art (AAPA), and further in view of Hirosh Ando (JP361032339), Applicants submit that claim 2 is dependent on allowable claim 1; and therefore, Applicants submit that claim 2 is patentable and not obvious under 35 U.S.C. §103(a) over Pratt et al. in view of Kyong-keun (AAPA) and further in view of Hirosh Ando.

Claim 6 is rejected under 35 U.S.C. §103(a) as being unpatentable over Pratt et al. (U.S. Patent No. 5,642,268) in view of the Applicant Admitted Prior Art (AAPA), and further in view of Nagai et al. (U.S. Patent No. 6,028,418). Applicants submit that claim 6 is dependent on allowable claim 1; and therefore, Applicants submit that claim 6 is patentable and not obvious under 35 U.S.C. §103(a) over Pratt et al. in view of Kyong-keun (AAPA) and further in view of Nagai et al. (U.S. Patent No. 6,028,418).

Applicants appreciate the opportunity to conduct a telephone interview with the Examiner on March 8, 2006 during which a proposed amended claim 1 and Pratt et al. were discussed. No agreement was reached.

Applicants submit that the application is now in condition for allowance and reconsideration of the application is respectfully requested. The Examiner is invited to contact the undersigned in order to resolve any outstanding issues and expedite the allowance of this application.

Respectfully submitted,

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